Town Of
AMHERST Massachusetts

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Subject: The Old Amherst Landfill – A Brief History, Current Conditions

This memo has been prepared for Town Meeting members to provide additional background information on Amherst's old landfill, which is the proposed location for a solar array that is the subject of Article 24.

A Brief History of the Old Landfill

The Old Amherst Landfill, located off Old Belchertown Road across from the Town's Transfer Station, is actually several parcels that were acquired by the Town. The two primary uses at the site were municipal waste disposal and an auto junk yard. The landfill section of the site started as an open dump and burn site and was transformed into an unlined "sanitary landfill." The landfill area and the junk yard were closed and capped in 1985.

Towards the end of landfill's life (1980) the Town and the Massachusetts Department of Environmental Protection (DEP) became concerned about volatile organic compounds (VOCs) that were detected in the Brickyard Well field that is located 0.45 miles down gradient of the landfill/ junkyard site. "Many VOCs are human-made chemicals that are used and produced in the manufacture of paints, adhesives, petroleum products, pharmaceuticals, and refrigerants. They often are in compounds of fuels, solvents, hydraulic fluids, paint thinners, and dry-cleaning agents commonly used in urban settings." (U.S. Geological Survey, 2005). The levels of the VOCs were less than 10 parts per billion (ppb). The source of the contamination was thought to be from the landfill, the junk yard or both.

The response to these findings was twofold. First the Brickyard Well field was discontinued from use as a water supply source. The Brickyard Well field was developed in the 1960's and consisted of several (13) shallow wells that pumped to a common discharge point into the water system. The system was noted in the Water Distribution System Study of 1983 as having a high operating cost in addition to the VOC concern. The second response was to develop the New Landfill, at 740 Belchertown Road, so the older site could be closed and capped.

After capping the Old Landfill in 1985, observed levels of VOCs in groundwater dropped. Recent data indicate VOC levels in groundwater now range from non-detectable to very low. An extensive sampling network of monitoring wells has been developed and tested during the past 30 plus years, and VOCs have only been detected in a few wells recently. These detections have been very low, well below drinking water standards, and in the majority of cases only one VOC

compound has been detected in each well. Furthermore, the distribution of wells in which VOCs have been detected is limited in extent, and the data show no indication of VOC migration to Amherst's drinking water supply wells. The closest drinking water well is 1.5 miles from the landfill. The landfill is not in the Zone II recharge area for this well.

During the discussions to cap the Old Landfill the idea of using the flat area as recreation fields came up on several occasions. The Town and DEP both expressed concern with this plan. The concern was not about adding soil, water piping, gravel and asphalt to build fields, about 17,000 tons of material. The concern was the resulting near daily use and exposure of large groups of children and parents directly on top of the capped landfill. The constant presence of people on the cap introduces many more variables to the site then a closed landfill with restricted access or a solar facility with restricted access. The additional variables introduced by recreational use would require a much more comprehensive risk assessment be performed on the capped area of the landfill to determine risk to the users of the site.

In 2002 as Amherst prepared to close the New Landfill, DEP directed that a Comprehensive Site Assessment (CSA) for the Old Landfill be completed. The CSA was completed in January of 2009 and DEP issued their findings in April of 2010. Both of these reports may be found on the town web page. The DEP's April 2010 Final Comprehensive Site Assessment concluded that "post-closure use of significant portions of the landfill may be possible. The landfill cap is at least 24 inches thick in almost all areas, with generally a 6-inch thick impermeable layer, and the topsoil of the cap appear to represent clean, "background" soil conditions."

Part of the CSA was to complete a Qualitative Risk Assessment (QRA) in accordance with DEP requirements and guidance. This QRA concluded that there were no significant risks to human health or public safety posed by the landfill. This document now serves as the baseline Risk Assessment for any future risk assessments or for examining impacts from potential reuses such as solar. DEP's April 2010 Assessment also stated that "If the Town wishes to seek post-closure use(s) for the landfill, a post-closure use permit application which complies with the requirements of 310 CMR 19.143 must be submitted to the Mass DEP for review and approval, prior to any such use, which must contain specific plans, including written descriptions, figures showing exact locations of any proposed use(s), and engineering plans and specifications, for any proposed uses."

<u>Current Conditions</u>

Now as we move forward looking to maintain current conditions or to possibly reuse a portion of the Old Landfill, there are items that the Town continues to

address. The first is the re-grading of the cap, second is continued environmental monitoring and lastly is the security of the site.

The Cap:
A landfill cap consists of several layers and each layer contributes to the overall effectiveness of the cap. The top layer supports the growth of grass that stabilizes the cap from erosion and provides for positive drainage of storm water off the cap. The existing depressions on the cap need to be repaired to restore positive drainage. Restoring positive drainage reduces the amount of possible infiltration. The CSA indentified through the HELP modeling tool that there could be 940 gallons/acre/day of leachate created from precipitation on the landfill cap. Re-grading the depressions would help reduce the amount of moisture that could become leachate.

It should be noted the HELP model was developed as a tool to do quick cost benefit analysis of new landfill cap design alternatives. It is being used here to calculate possible leachate generation rates at a closed landfill. When this modeling tool is used for existing landfill caps, the user is cautioned to verify that water equilibrium must be met in the model and care should be exercised in choosing the variables. This is also a tool that yields an estimate of possible flow, not actual flow.

Currently there are no plans to do any work on the clay portion of the cap. This is based on the 47 samples of the cap that were taken during the CSA. These samples showed that of the 15 samples that were taken on the portion of the cap covering the Municipal Solid Waste (MSW) section of the landfill, 4 samples were less than the required 8 inches in thickness. Of these four samples two were only 7 inches thick and two were four inches thick. It should also be noted that 8 samples showed no clay barrier. These samples were taken on sections of the property that are not covered by the cap.

Overall the conditions at the Old Landfill are as was stated in the CSA, “that there were no significant risks to human health or public safety posed by the landfill.”